#### **EMERGENCY ACTION PLAN**

# LEBO LAKE NORTHWEST, NORTHEAST AND EAST DAMS

AMERICAN FORK RANCH
Jed Evjene, Manager
and
THE GLENNIE RANCHES
Jane Glennie, Manager
Two Dot, Montana 59085

May 21, 2001  Upclated 6/16/02  6-4-04  If Lebo Lake's Northwest, Northeast, or East Dam is failing or failure seems imminent, call:
Wheatland County Sheriff
Disaster and Emergency Services
_American Fork Ranch, Jed Evjene, Manager632-4480 or 537-4405
The Glennie Ranches, Jane Glennie, Owner/Manager
C-J. Runch LLC 632-4480 & Family Cl

## TABLE OF CONTENTS

I.	IN	TRODUCTION	3
	A.	Purpose	3
	B.	Description of Dam	3
	C.	Access to Dam	3
	D.	Hazard Area	4
	E.	Responsibility and Authority	4
	F.	Periodic Review/Update	4
	G.	Approval	5
II.N	TOI	TFICATION PROCEDURES	6
	A.	Imminent or Actual Failure	6
	B.	Potentially Hazardous Situation	8
		Posting of the Notification Flowchart and Distribution of the EAP.	
III.I	MIT	TIGATION ACTIONS	11
	A.	Potential Problems and Immediate Response Actions	12
	B.	Emergency Supplies and Resources	. 14
	C.	Local Contractors and Engineers	14
API	PEN	NDICES	15
API	PEN	NDIX A Technical Data for Lebo Lake Northwest, Northeast and East Dams	A-1
API	PEN	NDIX B Inundation and Evacuation Maps	B-1
API	PEN	NDIX C Telephone Directory	C-1
A DI	DEN	IDIV D Dam Incident Depart Form	D 1

#### I. INTRODUCTION

#### A. Purpose

The purpose of this emergency action plan (EAP) is primarily to safeguard the lives of and secondarily to reduce property damage to the citizens of Wheatland County living near Big Elk Creek, Lebo Creek, American Fork Creek and the Musselshell River, in the event of flooding caused by a failure of Lebo Lake Northwest, Northeast, or East Dams.

#### B. Description of Dam

Lebo Lake Dams are in Wheatland County. The northwest dam is in Section 36, Township 7 North (T7N), Range 13 East (R13E); the northeast dam is located in Section 31, T7N, R14E; and the east dam is in Section 1, T6N, R13E. Lebo Lake is an off-stream storage impoundment, located in a natural depression which has three drainages leading from it. Failure of the northwest or northeast dams would release water into Big Elk Creek, a tributary to the Musselshell River. Failure of the east dam would release water into Lebo Creek, a tributary of American Fork Creek, which eventually runs into the Musselshell River. The dams are owned by the American Fork Ranch and The Glennie Ranches, Two Dot, Montana 59085. The stored water is used for irrigation. Technical data pertaining to Lebo Lake Northwest, Northeast, and East Dams and their structures are shown in Appendix A.

#### C. Access to Dam

The Lebo Lake Dams are located off of a county road, about eight miles south of Two Dot. Note that the county road may become flooded in the event of failure of the northwest or northeast dams, and the county road will wash out entirely in the event of failure of the east dam! If access from the north (Two Dot) is not possible, alternate access may be obtained by four-wheel drive from Melville (approx. 20 miles south). The nearest telephone is at the home of Jed Evjene, manager of American Fork Ranch, 632-4480.

#### D. Hazard Area

The evacuation area for failure of the northwest and northeast dams extends along Big Elk Creek to a point on the Musselshell River, just upstream of Ryegate. Hazards include the possible inundation of occupied dwellings along Big Elk Creek and the Musselshell River, the town of Two Dot, and Highways 12 and 191.

The evacuation area in the event of failure of the east dam extends along Lebo Creek, American Fork Creek, and the Musselshell River to a point just upstream of the town of Shawmut. Hazards include the possible inundation of occupied dwellings along Lebo and American Fork Creeks and the Musselshell River, and Highways 12 and 191.

Inundation and evacuation maps are found in Appendix B.

#### E. Responsibility and Authority

Pursuant to the Dam Safety Act, Chapter 15 of Title 85, MCA, the dam owner is responsible for production, coordination, maintenance, and implementation of this emergency action plan. The extent of owner implementation was defined through coordination of this plan with the county sheriff and the disaster and emergency services (DES) coordinator.

### F. Periodic Review/Update

The owner shall review/update this EAP annually. Review/update by a qualified professional engineer will be accomplished as required by the dam's operating permit, but no less than every five years.

	ponsibilities assigned he	rein for my department an	d/or agency.	
		•		
Signature	Date			
WHEATLAND	COUNTY SHERIFF'S	DEPARTMENT		
			·	
Signature	Date	·		

DAM OWNER OR DESIGNATED REPRESENTATIVE

Date

Signature

Original copy signed 6-01

### G.Approval

By my signature, I acknowledge that I, or my representative, have reviewed this plan and agree to the tasks and responsibilities assigned herein for my department and/or agency.

1-6-97 Derland godf

Signature

Date

Wheatland County Sheriff's Department

Signature

Date

Disaster and Emergency Services

Signature

Date

Dam Owner's Representative

Stanton L. Bramin

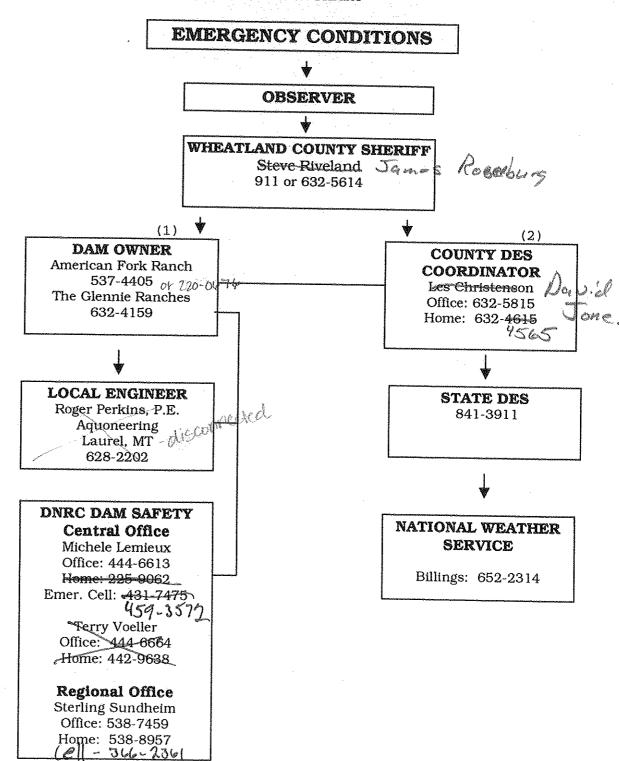
### II. NOTIFICATION PROCEDURES

#### A. Imminent or Actual Failure

It is important that you accurately judge whether the dam is about to fail. If you aren't sure whether the dam is threatened, seek advice from a qualified engineer or call the Dam Safety Section (444-6664/6613) of the Department of Natural Resources and Conservation (DNRC). If Lebo Lake Northwest or Northeast Dam is failing, two things must be done immediately: (1) the hazard area downstream from the dam must be evacuated, and (2) any steps that might save the dam or reduce damage to the dam or hazard area downstream should be taken. (Refer to the map in Appendix B to determine the areas likely to be inundated if the dam fails). The evacuation will be handled according to the county warning plan, and should be initiated as shown in Figure 1.

#### FIGURE 1

Lebo Lake Northwest, Northeast and East Dams ACTUAL OR IMMINENT FAILURE "NOTIFICATION FLOWCHART"



As dam owner, it is your responsibility to:

- 1. Call the Sheriff's Dispatch Center and Disaster and Emergency Services (911). Be sure to say, "This is an emergency." They will call other authorities and the media and begin the evacuation.
- 2. Do whatever is necessary to bring anyone in immediate danger to safety. This includes someone on the dam, directly below the dam, boating on the reservoir, or evacuees if so directed by the sheriff.
- 3. Keep in frequent touch with Disaster and Emergency Services staff. They will tell you how to handle the emergency.
- 4. If all means of communication are lost:
  - a. Try to find out why
  - b. Try to get to another radio or telephone that works
  - c. Get someone else to try to reestablish communications. If these means fail, handle the immediate problems as well as you can, and periodically try to reestablish contact with Disaster and Emergency Services.

#### B. Potentially Hazardous Situation

A potentially hazardous situation is an event or condition not normally encountered in the routine operation of the dam and reservoir. Among the unusual occurrences that may affect the dam are dam embankment problems, failure of the spillway or outlet works, heavy precipitation or rapid spring snow melt, landslides, earthquakes, erosion, theft, vandalism, acts of sabotage, and serious accidents. These occurrences may endanger the dam, the public, or the downstream valley and may necessitate a temporary or permanent revision of the dam's operating procedures. Help in these situations can be obtained by notifying those people shown in Figure 2.

#### FIGURE 2

### Lebo Lake Northwest, Northeast and East Dams POTENTIALLY HAZARDOUS SITUATION "NOTIFICATION FLOWCHART"

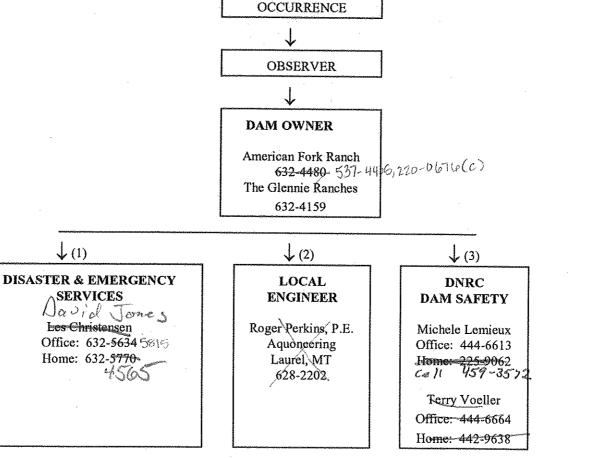
UNUSUAL

 $\downarrow$  (1)

SERVICES

Les Christensen

Home: 632-5770



Sterling Sundheim Office: 538-7459 Home: 538-8957

Cell - 366-2361

536-8951

- 1. If the dam owner discovers an unusual condition of the dam embankment that could threaten the structure:
  - a. Have a qualified engineer inspect the dam as soon as possible to determine whether emergency action is necessary.

- b. Notify the county Disaster and Emergency Services Coordinator (632-5815/4645) of the potential problem.
- Contact the local engineer (628-2202) and the Dam Safety Section (444-6613/6664) of the Department of Natural Resources and Conservation (DNRC).
- 2. Among the conditions the dam owner should watch for are:
  - a. Overtopping of the dam by flood waters
  - b. Loss of material from the dam crest due to storm wave erosion
  - c. Slides on either the upstream or downstream slope of the embankment as evidenced by:
    - (1). Sloughing
    - (2). Cracking
    - (3). Bulging
    - (4). Scarping
  - d. Erosional flows through, beneath, or around the embankment as evidenced by:
    - (1). Excessive seepage
    - (2). Discoloration of the seepage
    - (3). Boils on the downstream side
    - (4). Sinkholes
    - (5). Changes in the flow from drains
  - e. Failure of outlets or spillways due to clogging or erosion
  - f. Movement of the dam on its foundation as evidenced by:
    - (1). Misalignment
    - (2). Settlement
    - (3). Cracking

3. When the dam owner calls either an engineer or DNRC to report a problem, use the form in Appendix D to ensure you can provide sufficient information for the engineer to analyze the problems. In addition, prepare a sketch showing the extent of the problem. Revise the sketch periodically if the problem develops further.

Section III includes further guidelines for courses of action to take to mitigate the effect of many problems.

## C. Posting of the Notification Flowchart and Distribution of the FAP

The Notification Flowchart is posted at the dam and a copy of the EAP is in the gatehouse. This plan has been distributed as shown below:

Location		Number of Copies
Wheatland County Sheri	ff's Office	
Wheatland County Disast	ter and Emergency Services	
Jed Evjene, American Fo	rk Ranch	2
Jane L. Glennie, The Gle	nnie Ranches	2
Roger Perkins, P.E., Aqu	oneering, Laurel, MT	1
DNRC Dam Safety, Hele	na, MT	1
Moore, O'Connell & Ref	ling, P.C., Bozeman, MT	2

#### III. MITIGATION ACTIONS

Besides normal monitoring of the dam's condition, which is done at least monthly, the owner will provide continuous monitoring and inspection during and after extreme events such as storms and earthquakes.

Information on the magnitude of an earthquake or storm can be obtained from the DNRC Dam Safety Section (444-6613/6664). Actions are suggested below to mitigate problems that may develop, but those actions should never be continued at the risk of injury or at the expense of lessening efforts related to evacuation. Monitoring should identify any of the following potential problems.

# A. Potential Problems and Immediate Response Actions

### 1. OVERTOPPING BY FLOOD WATERS

- a. Open outlet to its maximum safe capacity.
- b. Place sandbags along the crest to increase freeboard and force more water through the spillway and outlet.
- c. Provide erosion-resistant protection to the downstream slope by placing plastic sheets or other materials over eroding areas.
- d. Divert flood waters around the reservoir basin, if possible.
- e. Create additional spillway capacity by making a controlled breach in a low embankment or dike section where the foundation materials are erosion-resistant.

# 2. LOSS OF FREEBOARD OR DAM CROSS SECTION DUE TO STORM WAVE EROSION

- a. Place additional riprap or sandbags in damaged areas to prevent further embankment erosion.
- b. Lower the water level to an elevation below the damaged area.

# 3. SLIDES IN THE UPSTREAM OR DOWNSTREAM SLOPE OF THE EMBANKMENT

- a. Lower the water level at a rate and to an elevation considered safe, given the slope condition. If the outlet is damaged or blocked, pumping, siphoning, or a controlled breach may be required.
- b. Stabilize slides on the downstream slope by:
  - (1). weighting the toe area with additional soil, rock, or gravel, and then
  - (2). restoring lost freeboard by placing sandbags at the crest.

# 4. EROSIONAL FLOWS THROUGH THE EMBANKMENT, FOUNDATION, OR ABUTMENTS

a. Plug the flow with whatever material is available (hay bales, bentonite, or plastic sheeting if the entrance to the leak is in the reservoir basin).

- b. Lower the water level until the flow decreases to a non-erosive velocity or stops.
- c. Place a protective sand-and-gravel filter or boil ring over the exit area to hold materials in place.

# 5. FAILURE OF APPURTENANT STRUCTURES SUCH AS OUTLETS OR SPILLWAYS

- a. Implement temporary measures to protect the damaged structure, such as closing an outlet or protecting a damaged spillway with riprap.
- b. Lower the water level to a safe elevation. If the outlet is inoperable, pumping, siphoning, or a controlled breach may be required.
- 6. MASS MOVEMENT OF THE DAM ON ITS FOUNDATION (SPREADING OR MASS SLIDING FAILURE)
  - a. Immediately lower the water level until excessive movement stops.

# 7. EXCESSIVE SEEPAGE AND HIGH LEVEL SATURATION OF THE EMBANKMENT

- a. Lower the water to a safe level.
- b. Continue frequent monitoring for signs of slides, cracking or concentrated seepage.

# 8. SPILLWAY BACKCUTTING, THREATENING RESERVOIR EVACUATION

- a. Reduce the flow over the spillway by fully opening the main outlet.
- b. Provide temporary protection at the point of erosion by placing sandbags, riprap materials, or plastic sheets weighted with sandbags.
- c. When the inflow subsides, lower the water to a safe level.

## 9. EXCESSIVE SETTLEMENT OF THE EMBANKMENT

- a. Lower the water level by releasing it through the outlet pumping, siphoning, or a controlled breach.
- b. If necessary, restore freeboard, preferably by placing sandbags.

## B. Emergency Supplies and Resources

An exposed bedrock outcrop located to the west of county road (between East and Northeast Dams) is a good source for coarse-grained materials and rocks. The area was used as a borrow area for past construction activities.

#### C. Local Contractors and Engineers

#### Local Contractors:

Diamond Construction Co. PO Box 5987 2905 North Montana, Suite 2000 Helena MT 59601 Telephone: 443-3373 Fax: 442-2450

#### Engineer:

Roger Perkins, P.E. Aquoneering 1555 Sage Circle Laurel MT 59044 Telephone: 628-2202 **APPENDICES** 

APPENDIX A Technical Data for Lebo Lake Northwest, Northeast and East Dams

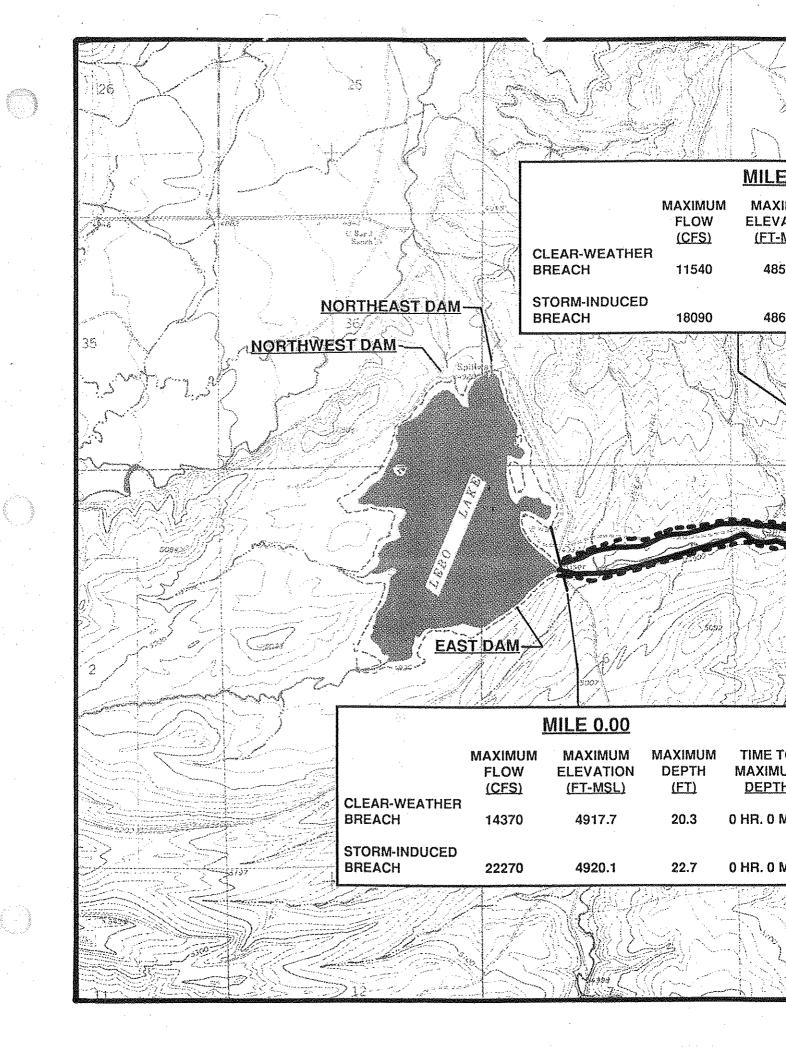
# APPENDIX A

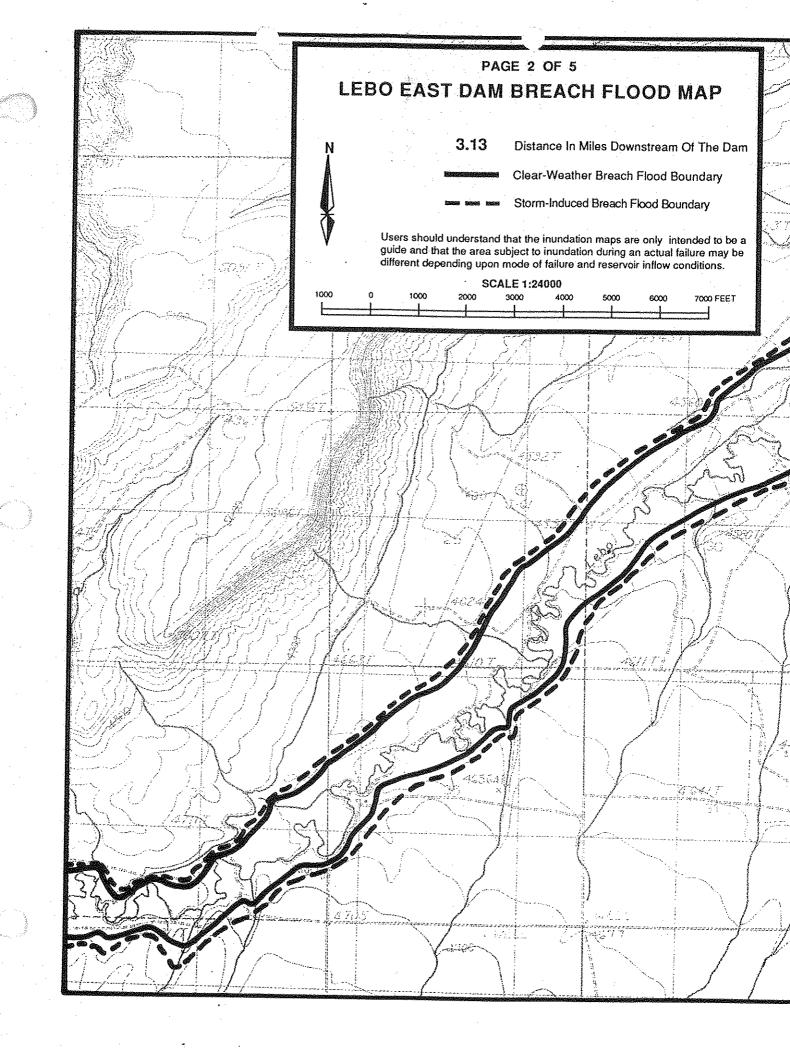
# Technical Data For Lebo Lake Northwest, Northeast and East Dams

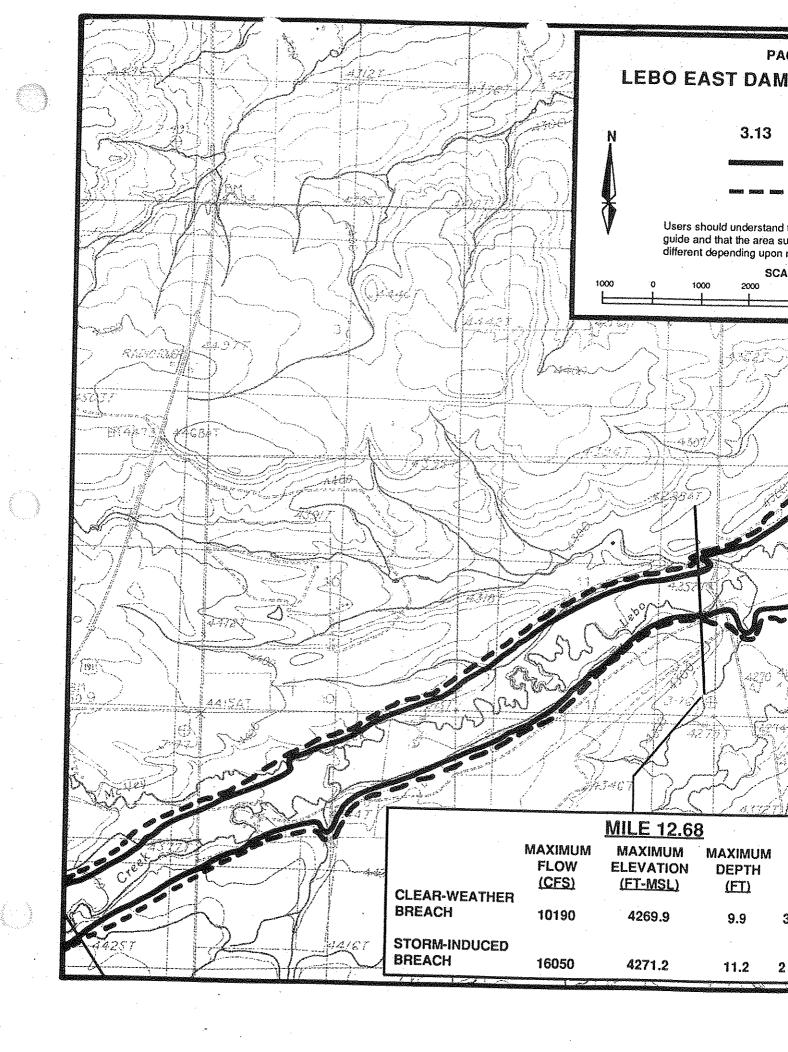
Maximum Reservoir Capacity to the Crest of the Northeast Dam: 4735 acre feet
Normal Reservoir Capacity Measured to the Principal Spillway Crest of the East Dam:
Normal Water Depth Measured from the Streambed to the Crest of the Emergency Spillway:  Northwest Dam
Dam Height Measured From the Streambed to the Crest:  Northwest Dam
Dam Crest Width:  Northwest Dam
Length of Dam Crest:  Northwest Dam
Outlet Capacity (Northeast Dam):
Principal Spillway Capacity (East Dam): 110 cubic feet per second
Emergency Spillway Capacity:
Date Constructed: Northwest and Northeast Dams
Slope of Upstream Face of Dam (Horizontal to Vertical):  Northwest and Northeast Dams

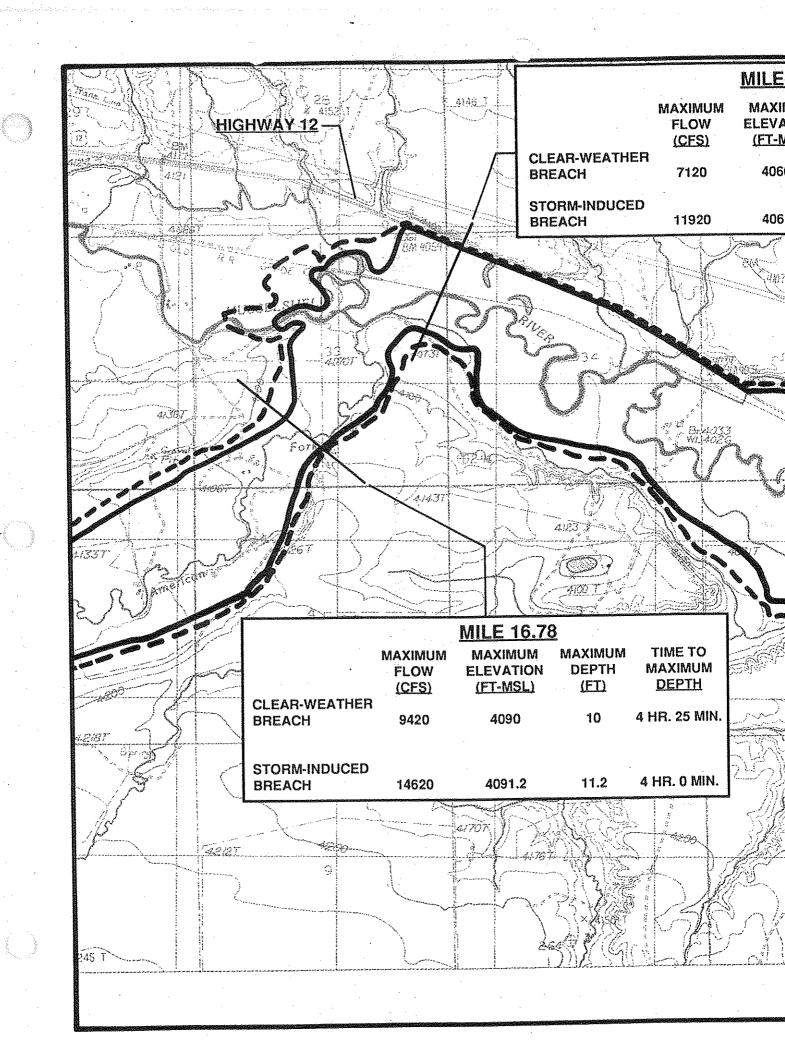
Slope of Downstream Face of Da	m (Horizontal to Vertical):	
Northwest Dam	######################################	2.2:1
Northeast Dam	***************************************	2.1
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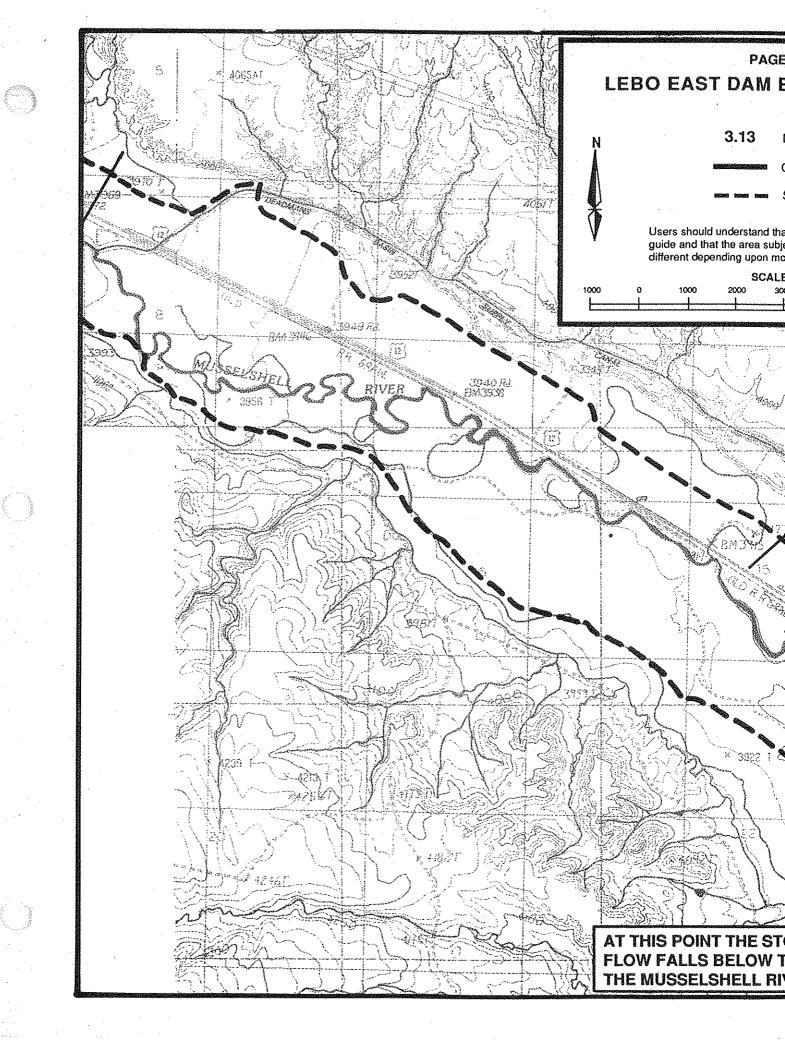
APPENDIX B Inundation and Evacuation Maps

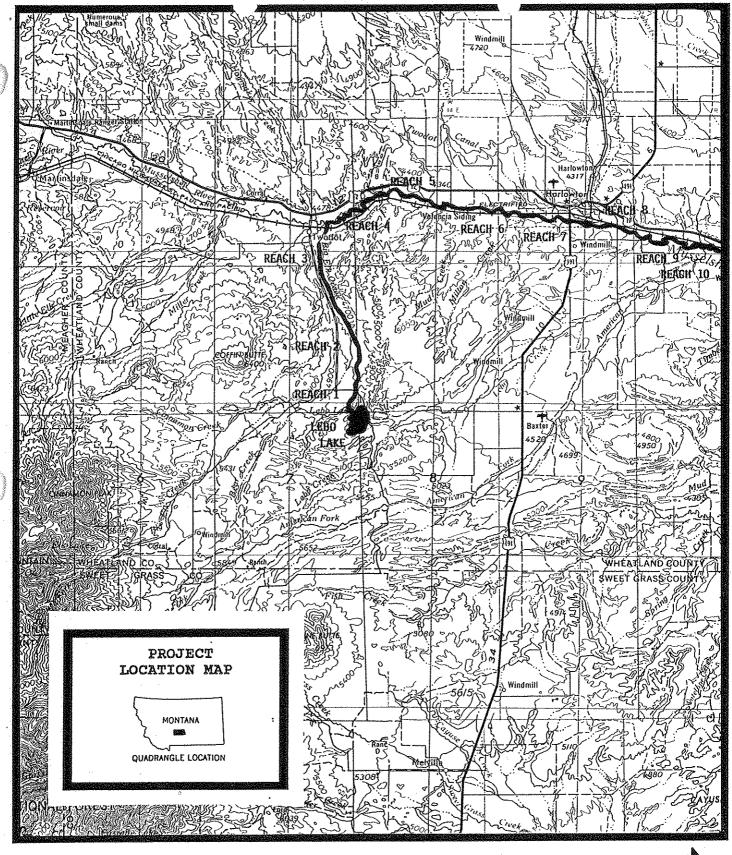






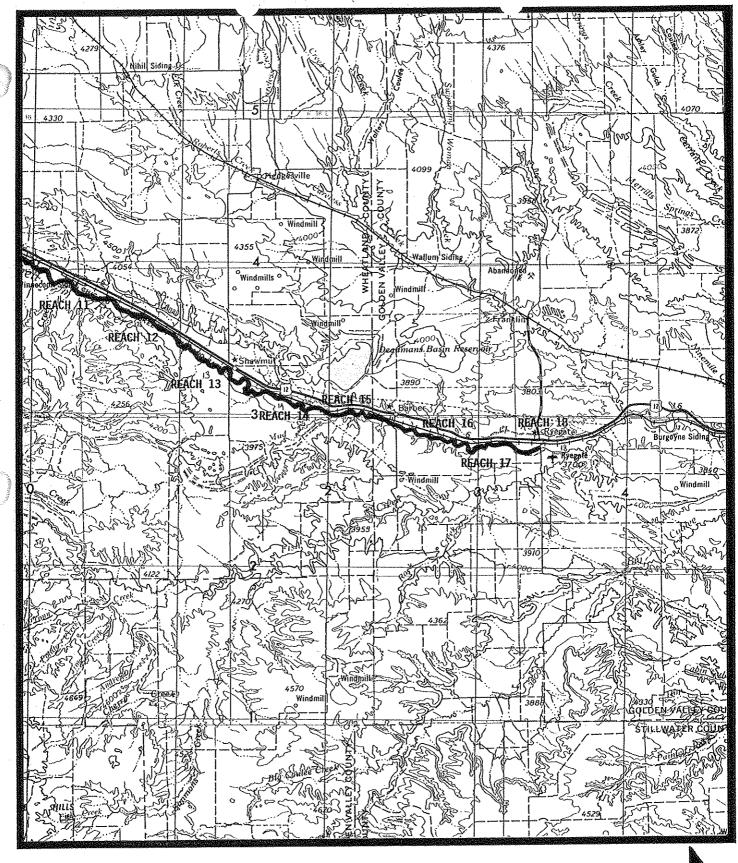




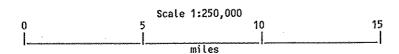


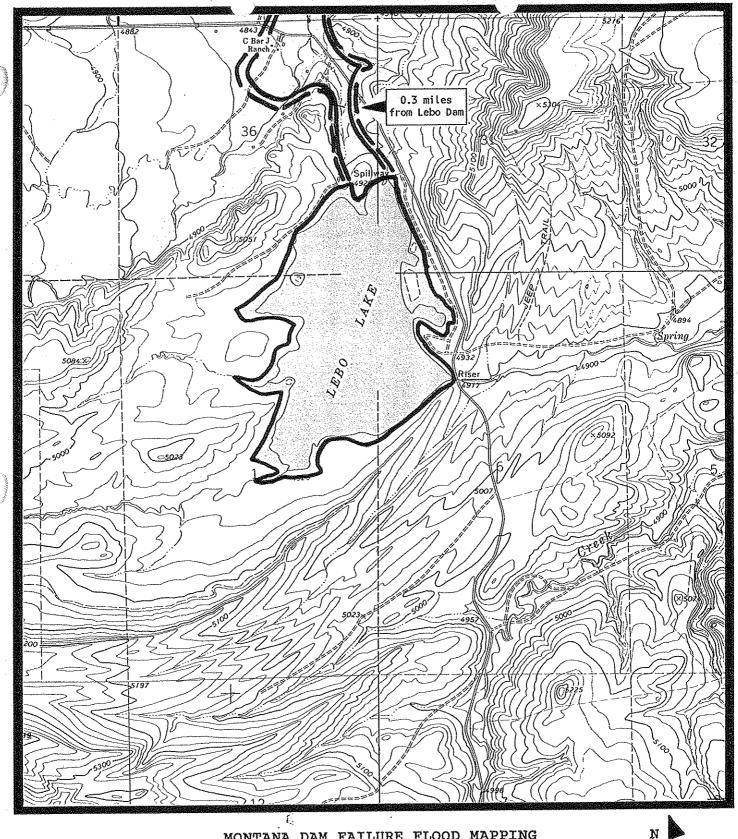
MONTANA DAM FAILURE FLOOD MAPPING LEBO LAKE DAM #2 (MT-653) - REACH LOCATION MAP 1

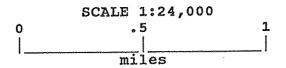
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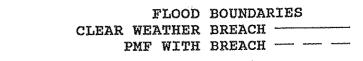


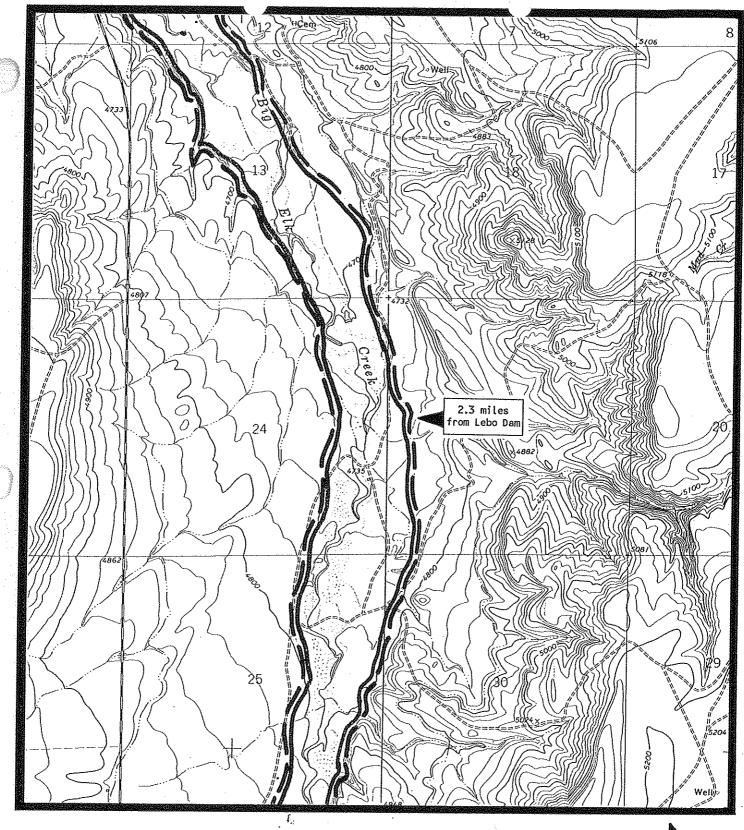
MONTANA DAM FAILURE FLOOD MAPPING LEBO LAKE DAM #2 (MT-653) - REACH LOCATION MAP 2



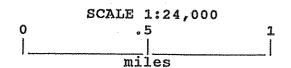


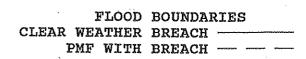


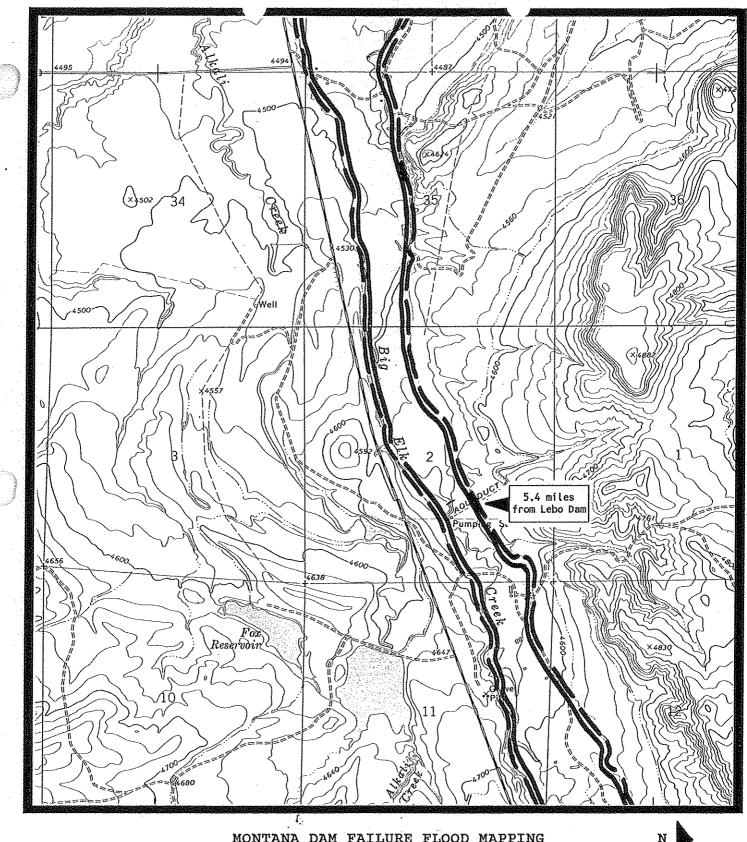


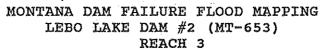


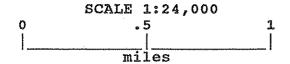
MONTANA DAM FAILURE FLOOD MAPPING LEBO LAKE DAM #2 (MT-653) REACH 2

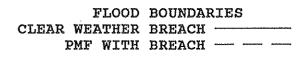


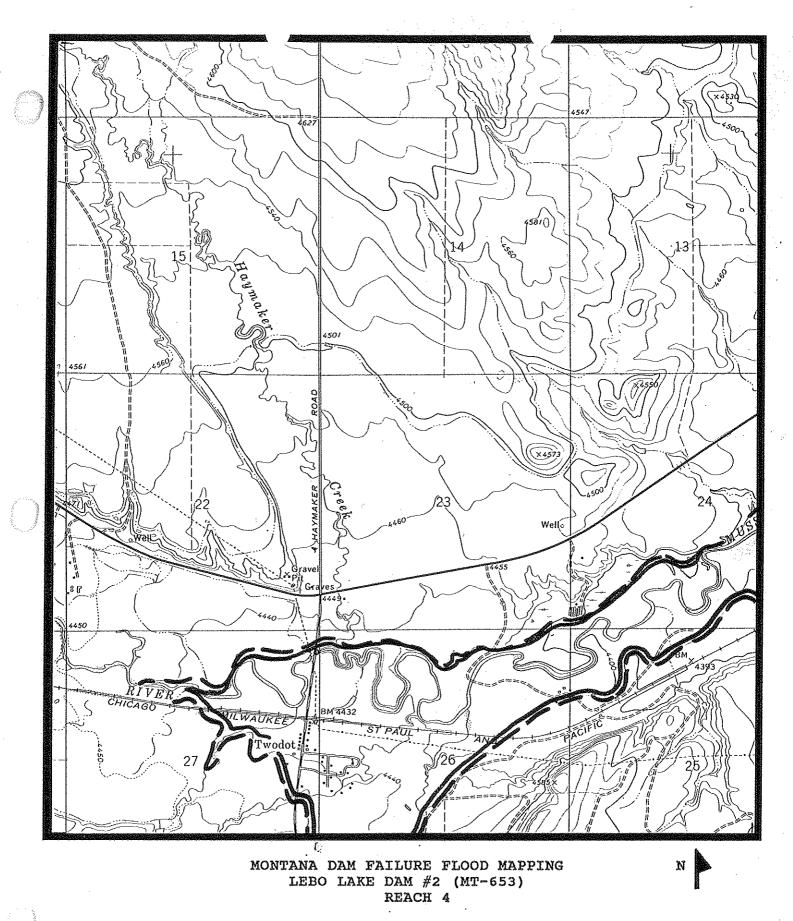




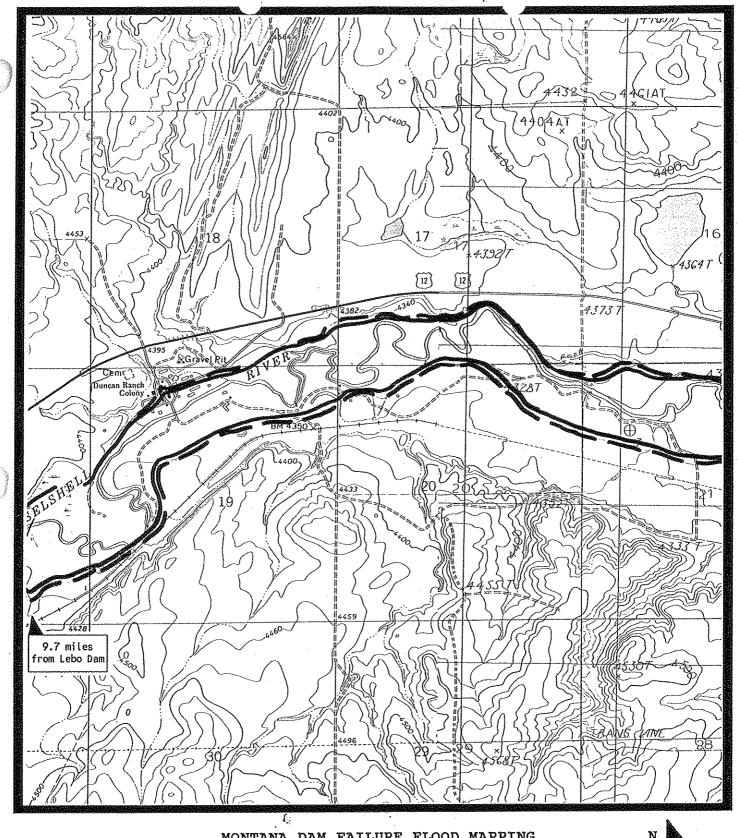




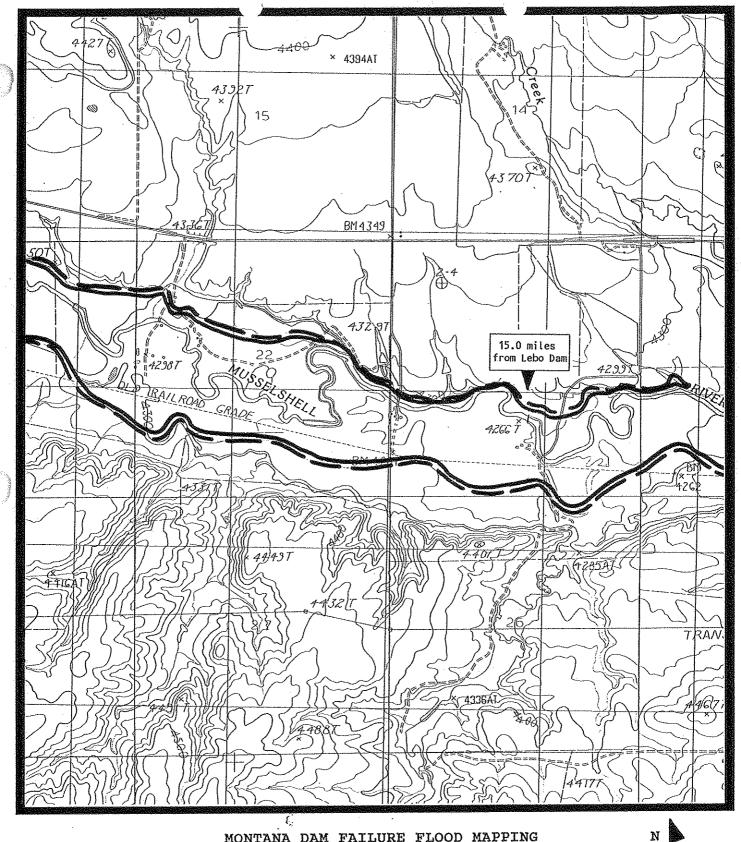




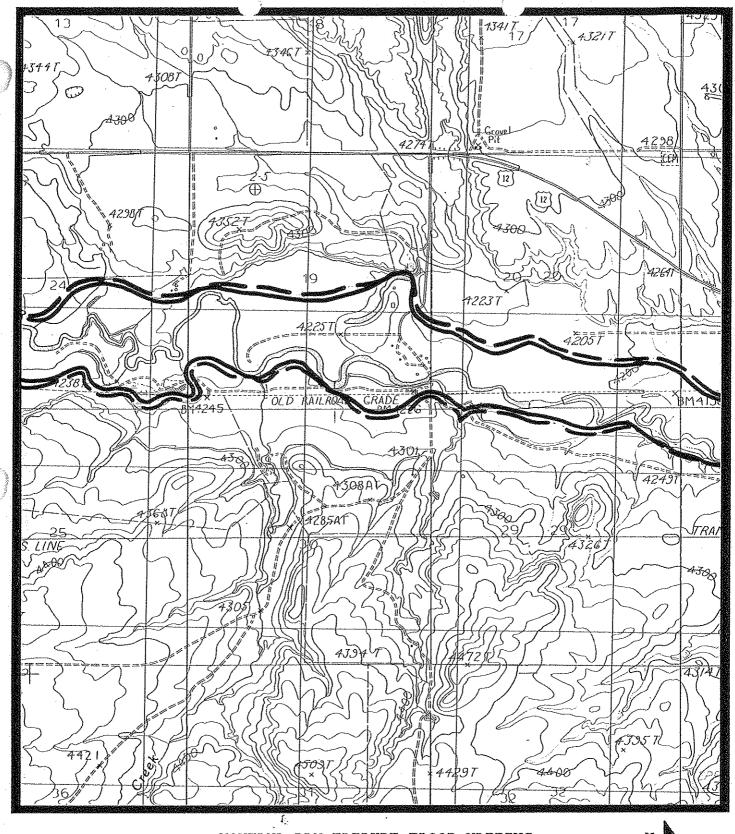
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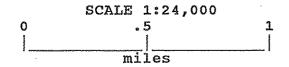


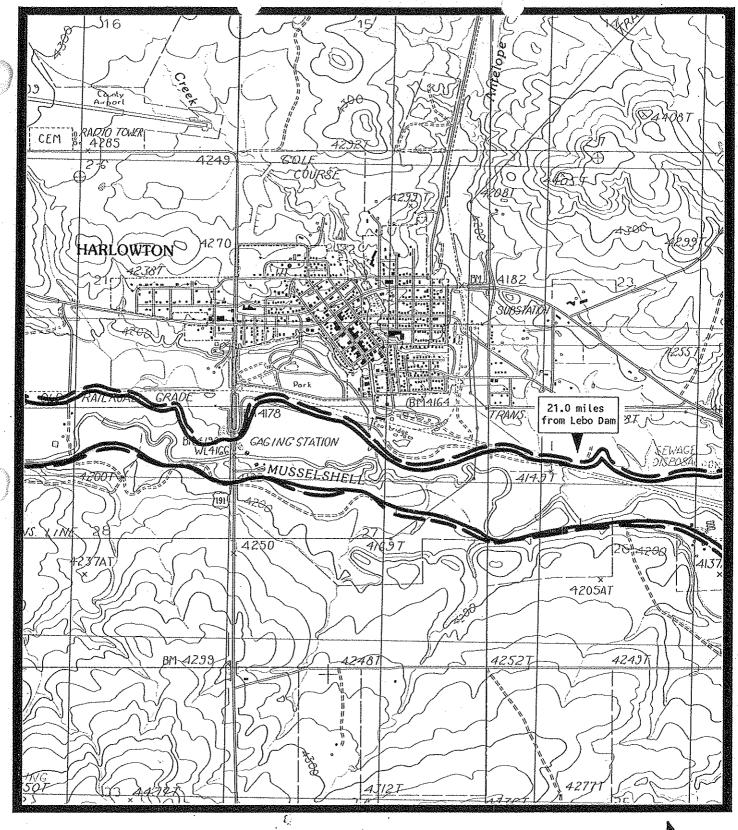
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CLEAR WEATHER BREACH — — —



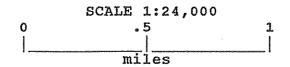
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CLEAR WEATHER BREACH — — — —



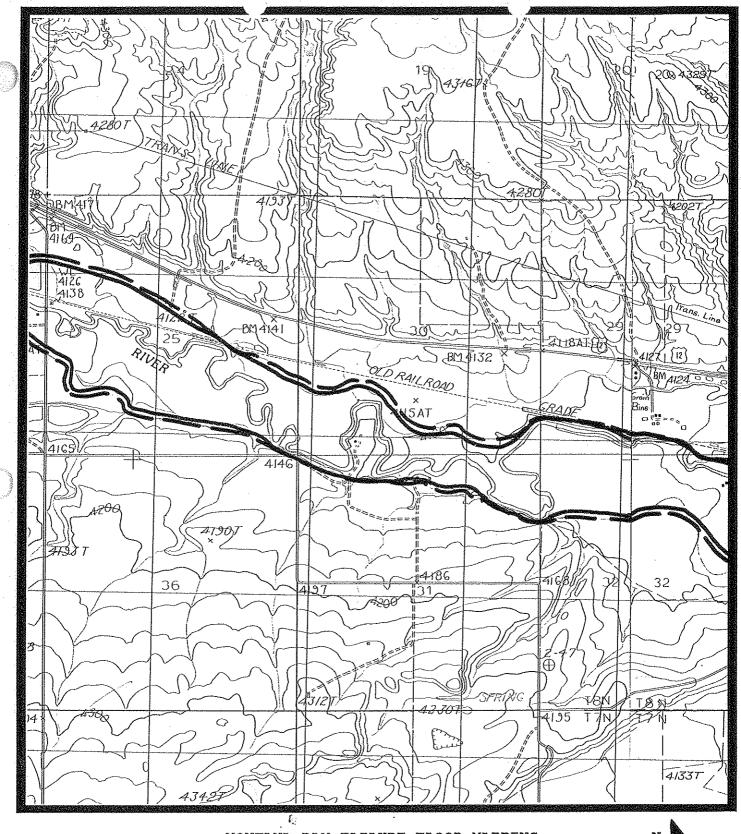




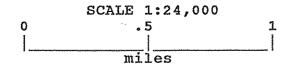
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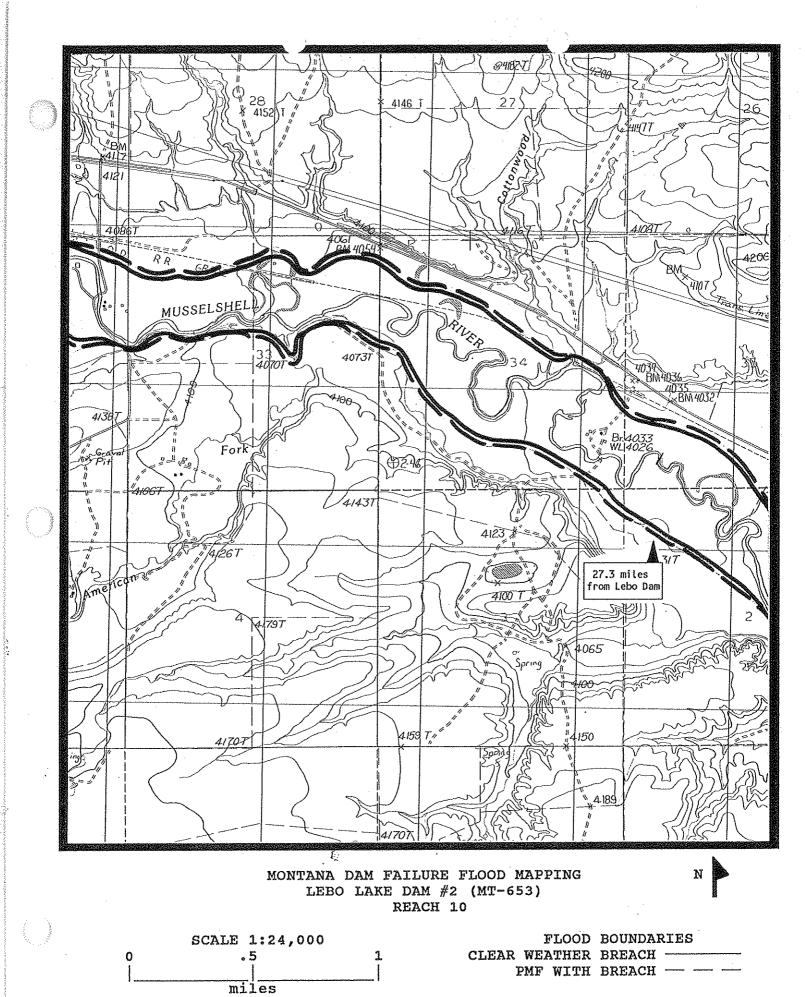
FLOOD BOUNDARIES
CLEAR WEATHER BREACH — — —

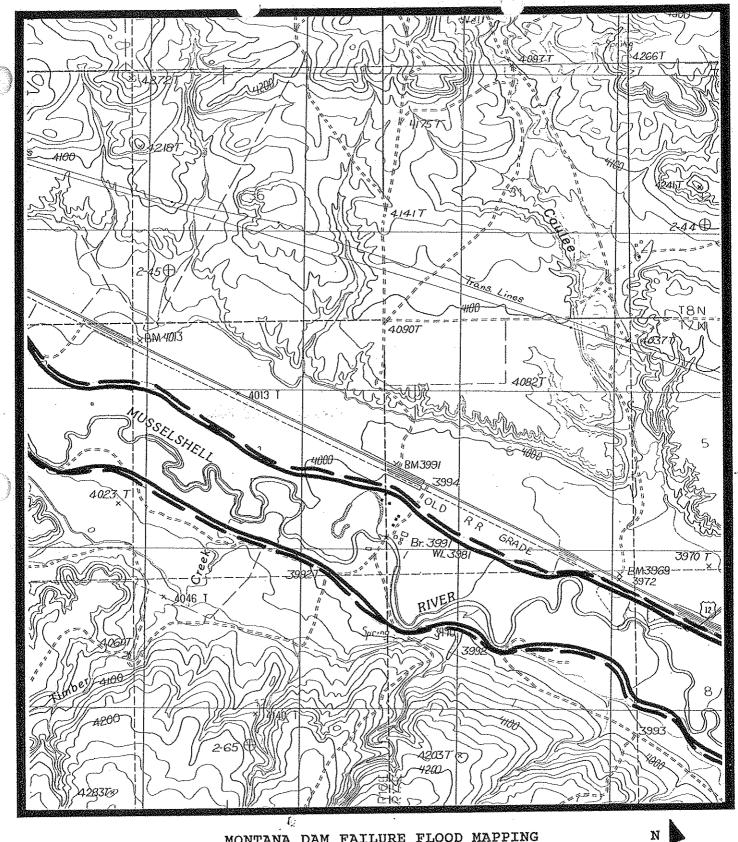


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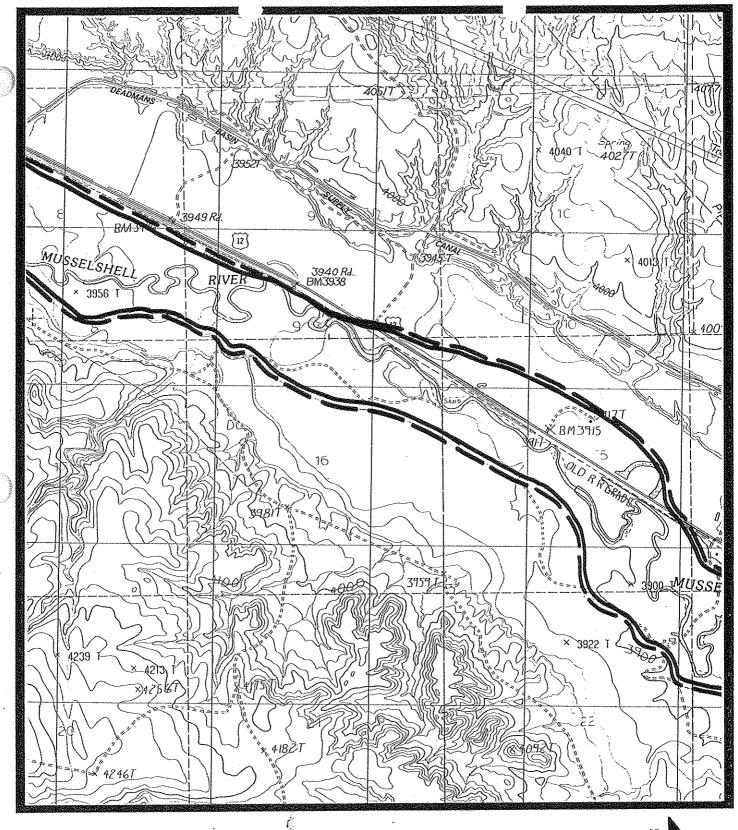


FLOOD BOUNDARIES
CLEAR WEATHER BREACH
PMF WITH BREACH

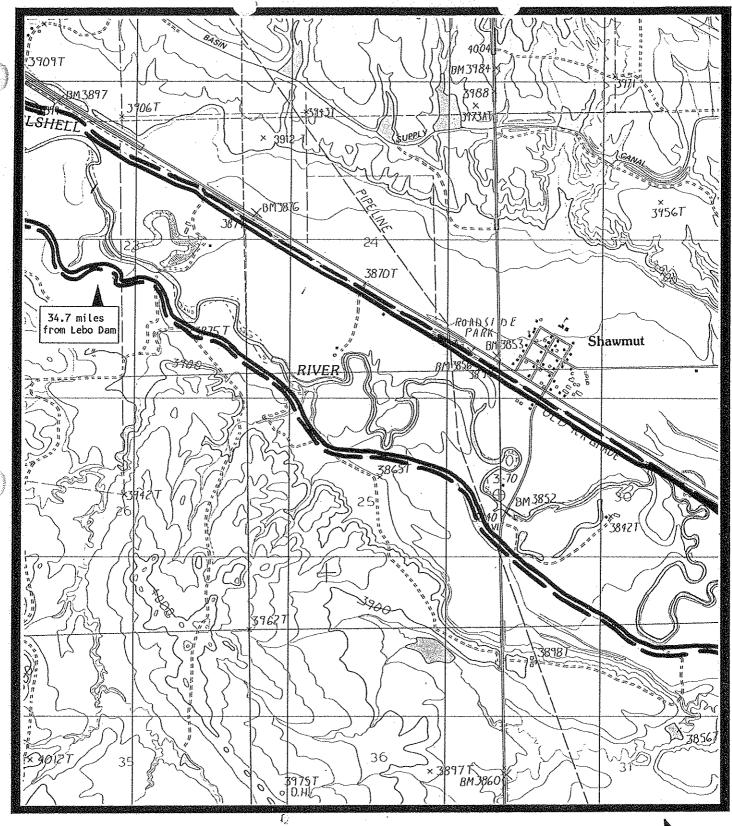




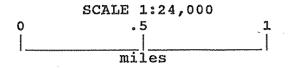
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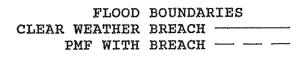


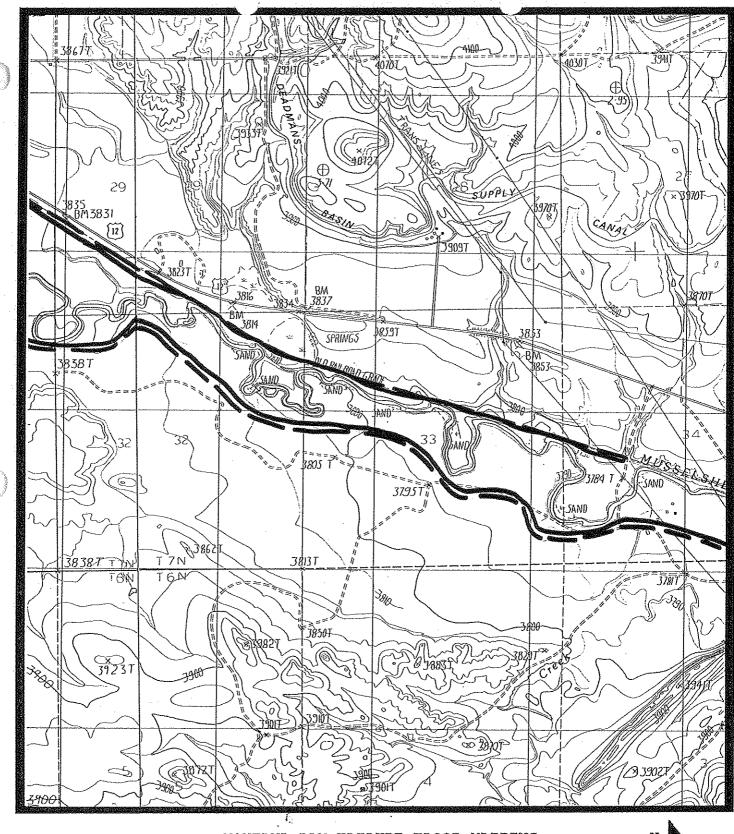
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CLEAR WEATHER BREACH
PMF WITH BREACH



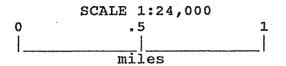
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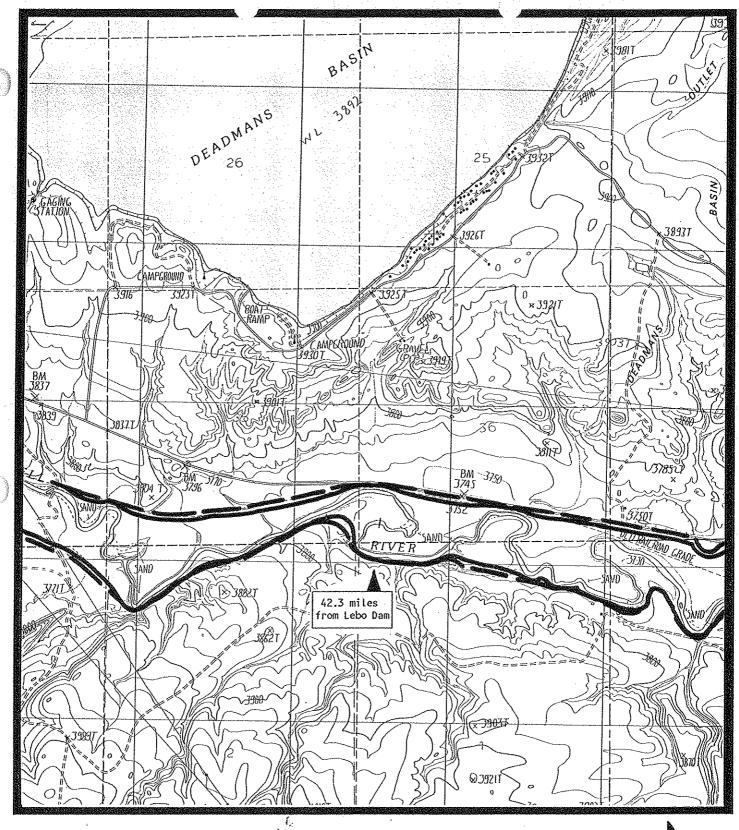


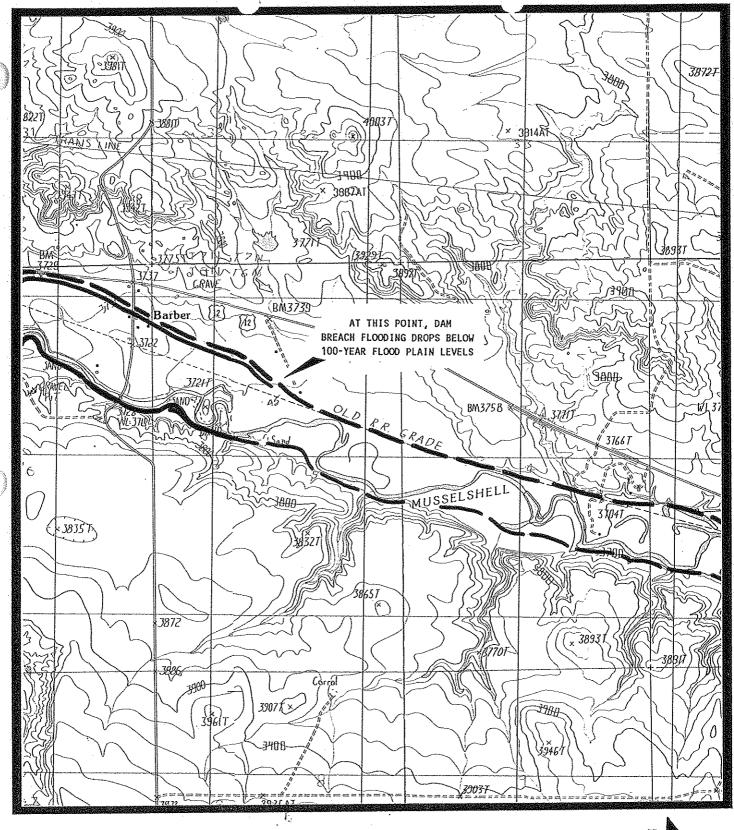




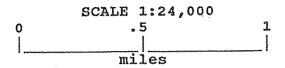
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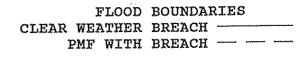


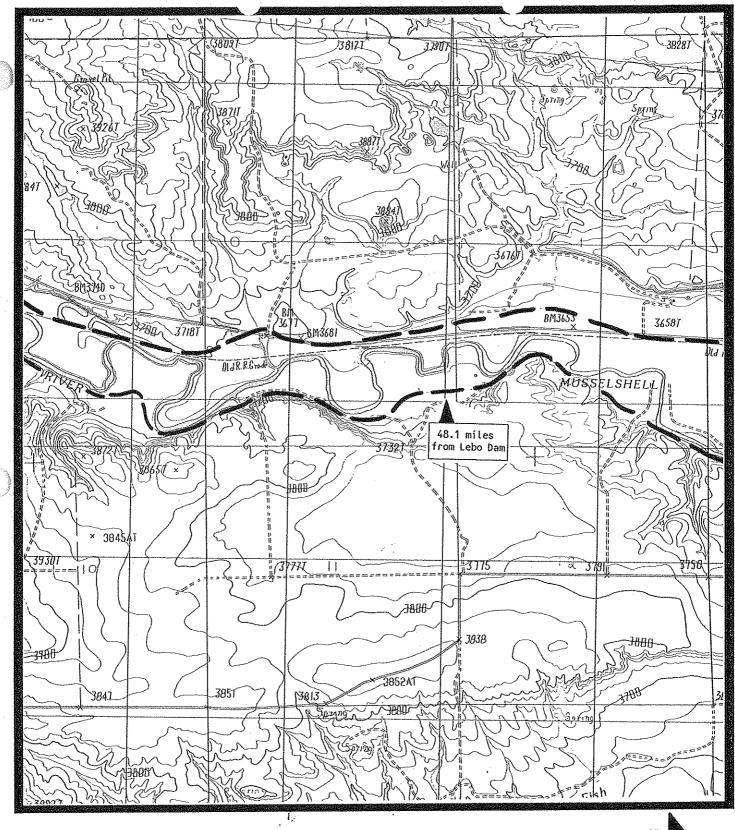


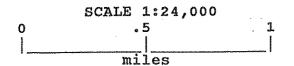


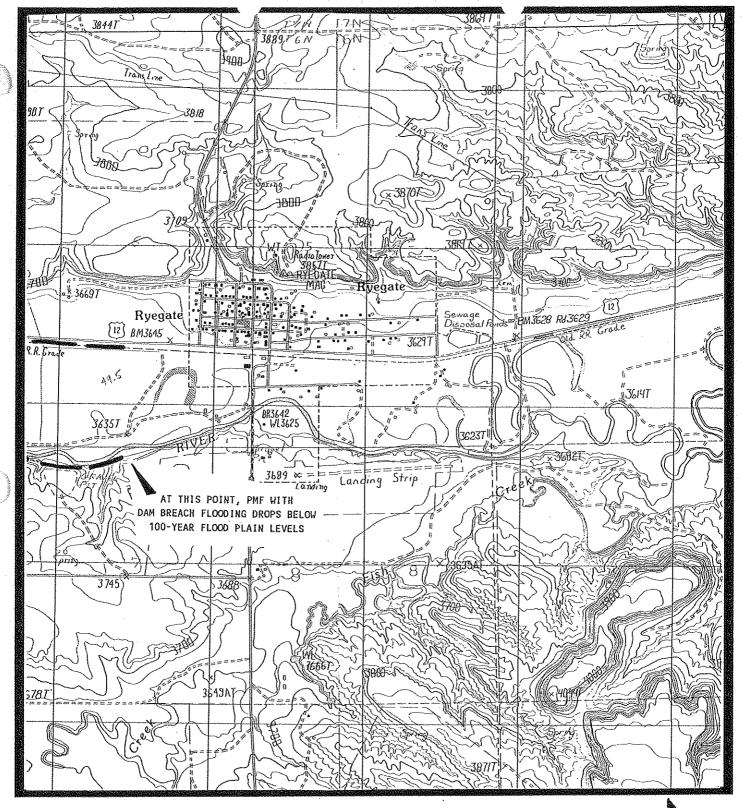












SCALE 1:24,000 0 .5 1 | \_\_\_\_| miles

APPENDIX C Telephone Directory

## Appendix C TELEPHONE DIRECTORY

A.	Priority One					
1.	SHERIFF Wheatland County	911 or 632-5614				
2.	DISASTER AND EMERGENCY SERVICES Wheatland EMERGENCY NUMBER	911				
	David Sovies Les-Christensen	Home: 632-4615				
	Montana Disaster and Emergency Services Division (Hele	na)841-3911				
3.	EVACUEES (in upstream-to-downstream sequence)					
		restriction and the state of th				
В.	Priority Two					
4.	LOCAL ENGINEERS					
	Roger Perkins, P.E. Aquoneering 1555 Sage Circle Laurel MT 59044 628-2202					
5.	. MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION					
	Dam Safety Section Engineers:	Office: 444-6613/ <del>666</del> 4				
	Ms. Michele Lemieux, (Soils and Embankments)	Home: 225-9062-459-3572				
	Mr. Terry Voeller (Spillways and Hydrology)					
	Water Operations Bureau	Office: 444-0860				
	Mr. Laurence Siroky, Bureau Chief					
6.	NATIONAL WEATHER SERVICE					
	Missoula	329-4718				
	Great Falls	453-9642				
	Billings	652-2314				

7. AMERICAN FORK RANCH	
Jed Evjene, Manager	537-4405
8. THE GLENNIE RANCHES	
Jane Glennie, Manager	632-4159

APPENDIX D Dam Incident Report Form

## APPENDIX D DAM INCIDENT REPORT FORM

DATE	<del>тиментерия в принципальной в</del>
NAME OF DAM	
STREAM NAME	
LOCATION	
OBSERVER —	
OBSERVER TELEPHONE	
NATURE OF PROBLEM	
LOCATION OF PROBLEM AREA (Looking Downstream)	
EXTENT OF PROBLEM AREA	
FLOW QUANTITY AND COLOR	
WATER LEVEL IN RESERVOIR	
IS SITUATION WORSENING?	
EMERGENCY STATUS	
EMERGENCT STATES	
CURRENT WEATHER CONDITIONS	
ADDITIONAL COMMENTS	

## APPENDIX D DAM INCIDENT REPORT FORM

DATE	TIME					
NAME OF DAM						
STREAM NAME		na ministranda media il 1900 (n. 1900 (	and the second s			
LOCATION						
COUNTY		· · · · · · · · · · · · · · · · · · ·	CONTRACTOR OF THE RESIDENCE OF THE PROPERTY OF			
OBSERVER						
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EXTENT OF PROBLEM AREA				· · · · · · · · · · · · · · · · · · ·		
FLOW QUANTITY AND COLOR						
WATER LEVEL IN RESERVOIR						
IS SITUATION WORSENING2			,			
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CURRENT WEATHER CONDITIONS.		**************************************	. , , , , , , , , , , , , , , , , , , ,	manufacumidisSchill philippinghyppinghypming		
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